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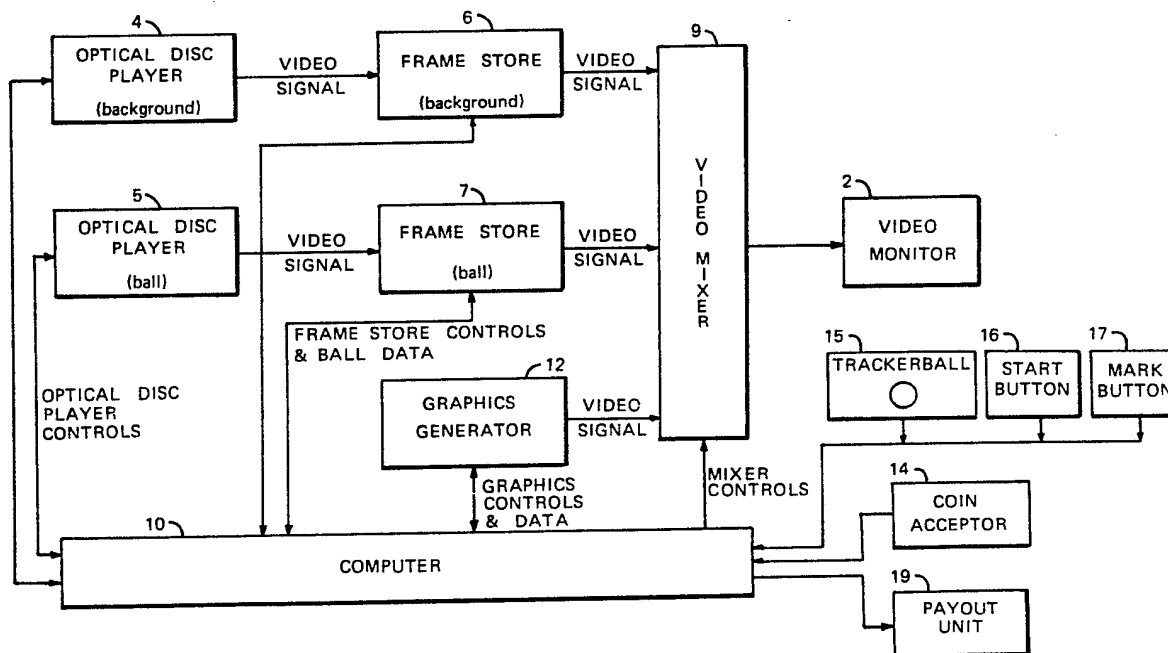
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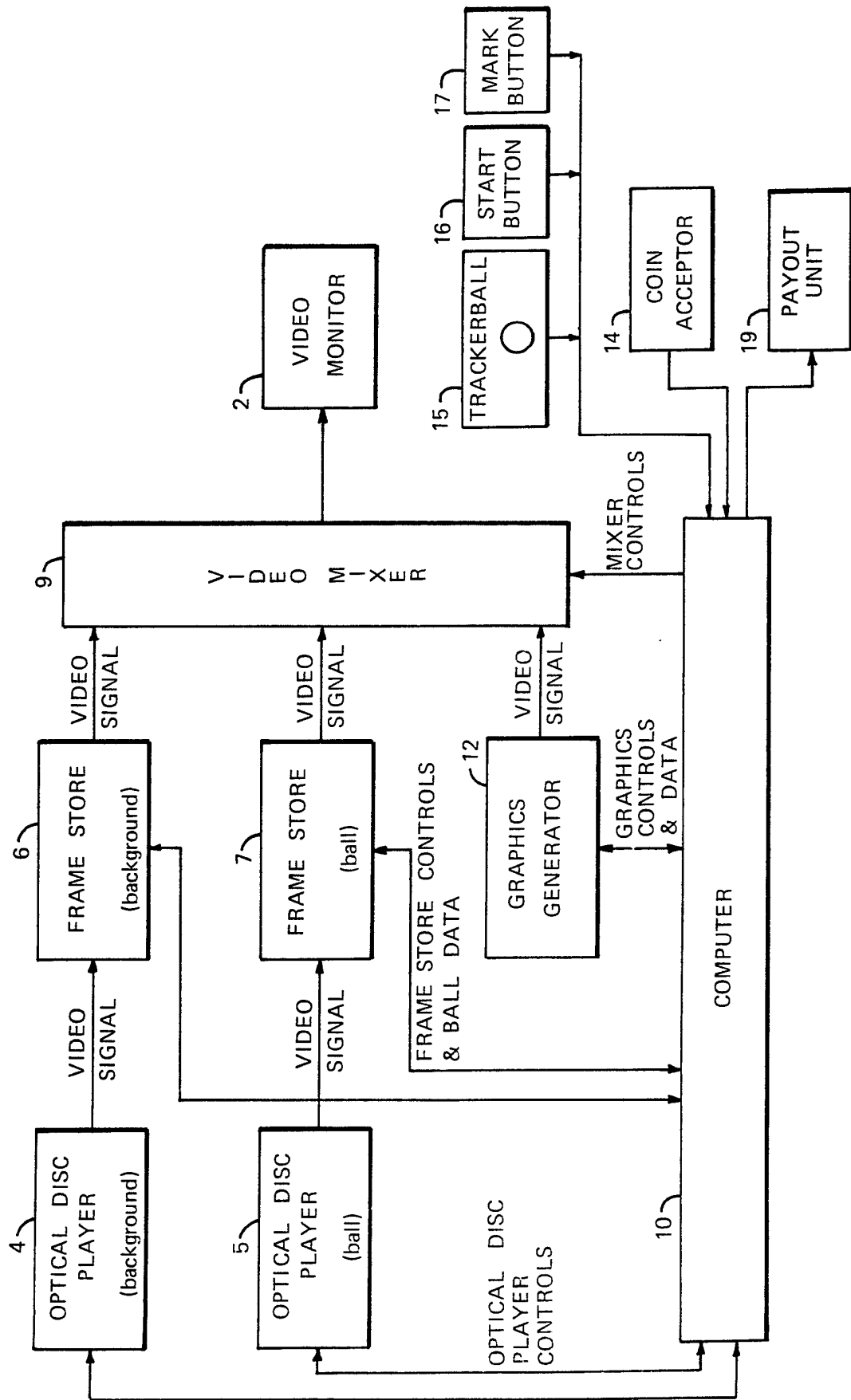
(58) Field of search

**UK CL (Edition J) A6H H16 H17**  
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(54) **Amusement machine**

(57) An amusement machine for playing "spot-the-ball" type games comprises a display device for presenting to a player of the amusement machine a visual display 2 of information indicative of a position of an element absent from the display, means 15 operable by the player to indicate a selected possible position for the absent element and means for indicating the spacial relationship between the position of the element and the selected position. The player may be awarded a prize the amount of which can be dependent on the accuracy of his deductions about the position of the ball in video programmes of football, baseball or snooker. As shown the machine is coin-operated and a computer 10 controls both a disc player 4 to send out signals representing a ball game without an image of a ball and a disc player 5 to send out signals representing only the ball position.





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## AMUSEMENT MACHINE

### DESCRIPTION

The invention relates to an amusement machine which can be arranged to function as a skill-with-prize  
10 (SWP) amusement machine.

In accordance with the invention, there is provided an amusement machine comprising a display device for presenting to a player a visual display of information indicative of a predetermined position in,  
15 or in relationship to the display, of at least one element absent from the display, means operable by the player to show in, or in relationship to the display, at least one selected position for the absent element, and means for indicating the spatial relationship  
20 between the predetermined position of the element and the or each selected position. The means for indicating the relationship between the predetermined and selected position can function so as to measure the error in the choice of the selected position and can  
25 control a prize awarding mechanism so that the value of the prize awarded is dependent on the degree of error.

The visual display can be a single static display, for example of a scene of a football match, which has been processed so that the ball cannot be seen.  
30 However, a moving display can be employed; for example, instead of a single scene from a football match, the display may be a short sequence extracted from a match, which has again been processed so that the ball cannot be seen during the final frame which is  
35 frozen for the player to indicate the selected position

or positions of the ball. Alternatively, the ball can be deleted from all the frames of a final portion of the sequence, the last frame of which is frozen.

When the static display becomes available, or when  
5 a moving display comes to its end, the player is instructed to locate with a suitable mark, for example a cross, the position on the display area, which he selects as the position of the deleted football or the like. The player may be permitted to place on the  
10 display a plurality of crosses or other marks, each of which may be located independently, or which may form a predetermined pattern to be positioned as a whole.

The mark or marks having been placed to the player's satisfaction, he may then further operate the  
15 machine to cause the ball or the like to appear, so that the accuracy of his placing of the mark or marks can be determined. Where the display is static, the original display is simply replaced by an equivalent display including the ball. Where a moving display is  
20 used, the final frame, with the ball re-inserted may be shown, or the final portion of the display may be re-run with the ball included, the last frame being again frozen. The player's mark or marks continue to be displayed during this phase of play.

25 The display at this time may be enlarged, with the ball position centred, for more accurate determination of the player's degree of success. A scoring grid can itself be superimposed on the display, or the mark or mark can comprise such a grid, as by having the form of  
30 series of concentric circles.

Finally, the player may be awarded a prize the amount of which can be dependent on the accuracy of his deductions about the position of the ball or the like. Prizes may be awarded not only for "direct hits" but  
35 graded prizes may be provided for near misses, in

amounts dependent on the nearness of the miss.

The machine may be coin or token operated, and means can be provided in the machine for adjusting the play selectively, in response to a player's skill, or  
5 in response to some other operating condition. A predetermined ratio between incoming revenue and outgoings in the form of prizes can thus be maintained. The adjustment can be effected during the first phase of play, by selection from a library of displays of  
10 varying difficulty, and/or during the second or marking phase, by adjusting the effective area of the marks applied to the display, and/or during the third or scoring, phase by adjustment of the criteria by which success is measured. Additionally or instead,  
15 adjustment can be made of the value of the prizes awarded as by altering the actual value earned by the winning of a set number of scoring points.

Although reference is made herein to football only, it will be understood that the display can be  
20 taken from any other suitable game, for example, baseball or snooker, or may be a synthesized display, not necessarily representing a game.

The invention is further described below, by way of example, with reference to the accompanying drawing,  
25 of which the single figure is a schematic block diagram of the circuitry of a "spot-the-ball" amusement machine embodying the invention.

The illustrated amusement machine comprises a display unit in the form of a video monitor 2 to which  
30 video signals can be fed from first and second optical disc players 4 and 5, by way of respective frame stores 6 and 7, and a video mixer 9. The optical disc in the optical disc player 4 stores signals representing short excerpts, preferably fairly large in number, from a  
35 football game or games. The signals have been treated

so that no image of the football is visible on the screen of the monitor 2, the area of the display previously containing the ball being suitably reconstructed. The optical disc in the second player 5 stores video signals representing only the ball positions in the excerpts recorded in the first optical disc which thus comprise background material only. Provision is made for convenient replacement of the optical discs in the players 4 and 5.

10       The disc players 4 and 5, the frame stores 6 and 7, and the video mixer 9 are all independently controllable by a computer 10, as is a graphics generator 12 which can also supply signals to the video monitor 2 by way of the video mixer 9.

15       A first control input to the computer 10 is derived from a coin or token acceptor device 14 which enables play on receipt of a valid coin or token. A second input to the computer 10 carries signals from a marking or position selecting device 15 which is  
20 selectively controllable by the player, from a start switch or button 16, and from a mark switch or button 17, the function of which will appear from the following description. The computer 10 can output a pay-out signal to a pay-out unit 19 to carry into  
25 effect any prize awarded as a result of the player's success in operating the machine.

In the standby condition of the machine, the video monitor 2 may display graphics from the graphics generator 12 affording information about the play  
30 afforded by the machine. Once the computer 10 has been enabled by a signal from the coin acceptor 14, play is commenced by the computer in response to operation of the start button 16. The computer 10 randomly selects a football game excerpt from the optical disc on the  
35 disc player 4, and the associated football

representations from the disc on the disc player 5. The computer 10 then effects synchronization of the two disc players and then feeds the selected video signals, together with appropriate graphics material from the generator 12 through the mixer 9 onto the monitor screen. The player will consequently observe a short excerpt from a football game in which the ball appears in the first portion, which may run for a few seconds. The ball however does not appear in the final frame, or in a second portion of the excerpt, because the computer 10 effects inhibition of the signal from the disc player 5, causing the ball to disappear. At the end of this first phase of the play, the final frame, held in the frame store 6, is frozen.

15 In the second phase of play, the computer 10 causes the graphics generator 12 to produce on the screen one or more crosses or other position-indicating marks, and the player is asked to operate the marking device 15, which can comprise a "Trackerball" device, so as to move them individually or as a group to a selected position or positions on the frozen display. The selected position or positions correspond to the position of the football, or to likely positions of the football, as deduced by the player from the first portion of the display. Once selectively positioned in this way, the position of the cross or group of crosses on the screen is fixed by the computer 10 in response to operation by the player of the mark button 17. This ends the second phase of the play which continues with the final, scoring, phase.

30 On initiation of the scoring phase, the computer 10 effects reversal of the disc players at least to the point at which the image of the ball no longer appears on the screen and then replays the remaining portion of the excerpt, however with the ball included right up

into the final frame. The display is then again frozen in the same position as at the end of the first phase, but as the ball is now included, its position relative to the position of the crosses, as stored in the  
5 computer 10, can be compared.

If one or more crosses are within a predetermined "winning" distance of the ball position, defined by a circle centred on the centre of the ball, the computer 10 manipulates the data in the image frame stores 6 and  
10 7 and in the graphic generator 12 to effect an enlargement of the display, centred on the ball position, and superimposed on this a scoring grid. Scores according to the location of the winning crosses within this grid are totalled in the computer and the  
15 score so obtained is compared with a predetermined stored award structure, providing an output to the payment unit 19 by which an appropriate prize is awarded to the successful player.

Although not shown, the machine described  
20 preferably incorporates adjustment means, selectively operable, or responsive to a player's skill, so as to limit pay-out to a very successful player, or to afford encouragement to a less successful player to thereby maintain his interest, or so as to maintain a  
25 predetermined ratio of pay-out to income regardless of operating conditions. The adjustment can be effected, for example by causing the computer 10 to select randomly from within more or less difficult sets of display excerpts, by extending or contracting the  
30 second portion of the display where this is provided for, or by adjustment of the "winning" distance between cross and the ball, and/or the size of the scoring grid.

Instead of recording background and ball position  
35 signals on separate discs, these signals could all be



stored in a single disc with two pick-ups, so that  
synchronisation does not have to be effected by the  
computer. Alternatively, all the signals could be  
recorded on a single disc read by a single pick-up, but  
5 with the images alternating frame-by-frame for  
multiplexing into the frame stores. The invention can  
thus be embodied in a variety of ways other than as  
specifically described.

CLAIMS

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1. An amusement machine comprising a display device for presenting to a player a visual display of information indicative of a position in or in relationship to the display, of at least one element  
10 absent from the display, means operable by the player to show in, or in relationship to the display, at least one selected position for the absent element, and means for indicating the spacial relationship between the position of the element and the or each selected  
15 position.

2. A machine as claimed in claim 1, wherein the means operable by the player comprises at least one cursor means.

3. A machine as claimed in claim 2, wherein a  
20 plurality of cursor are provided, each being independently movable relative to the visual display.

4. A machine as claimed in claim 1, 2 or 3, wherein the means for indicating the spacial relationship comprise means for enlarging the  
25 information display in the region of the position.

5. A machine as claimed in any preceding claim, wherein the means for indicating the spacial relationship comprises a grid.

6. A machine as claimed in claim 5, wherein the  
30 cursor means comprises said grid.

7. A machine as claimed in claim 5 or 6, wherein the grid comprises at least one set of concentric circles.

8. A machine as claimed in any preceding claim  
35 and having first and second data storage means for

storing data relating to the visual display and to the element position respectively.

9. A machine as claimed in claim 8, having mixer means for providing a display combining the data of the first and second storage means.

10. A machine as claimed in any one of claims 1 to 7, having a data storage means for storing data relating to the visual display and data relating to the element position.

11. A machine as claimed in claim 10, having multiplexer means to separate the data from said first and second recorded data storage means.

12. A machine as claimed in any of claims 8 to 11, wherein the data storage means comprise at least one data storage disc.

13. A machine as claimed in claim 12, wherein the data storage disc comprises an optical disc.

14. A machine as claimed in any of claims 8 to 13, wherein the data storage means stores a plurality of the visual displays and related element positions.

15. A machine as claimed in any preceding claim and having microprocessor control means.

16. A machine as claimed in any preceding claim arranged to display a still visual display.

17. A machine as claimed in claim 16, wherein the element can be selectively displayed in the visual display.

18. A machine as claimed in any of claims 1 to 15, and arranged to display a moving picture sequence.

19. A machine as claimed in claim 18, wherein the absent element is absent only from at least the last frame of the sequence.

20. A machine as claimed in claim 19, including means for repeating said sequence with the previously absent element present.

21. A machine as claimed in any preceding claim and arranged to display a sports scene.

22. A machine as claimed in claim 21, wherein the information indicative of a position comprises the  
5 attitude of a player represented in the sports scene.

23. A machine as claimed in claim 21 or 22, wherein the sports scene is that of a football match.

24. A machine as claimed in any preceding claim, including means for varying the indicative quality of  
10 the information indicative of the position, and/or for varying the dimension of the selected position indicator means relative to said information, in response to selection means.

25. A machine as claimed in claim 24, wherein the  
15 selection means is operable by the machine player.

26. A machine as claimed in claim 24, wherein the selection means is operable in response to the success of the machine player or players.

27. A machine as claimed in of claims 1 to 24,  
20 having means for delivering a prize in response to the spacial relationship.

28. A machine as claimed in claim 27, having means for computing one of a plurality of possible prizes in response to selection by the machine player.

25 29. A machine as claimed in any preceding claim, operable by way of coin or token insert means.

30. A machine as claimed in claim 29 when dependent on claim 26 or 27, wherein the prize comprises at least one coin or token.

30 31. An amusement machine substantially as hereinbefore described with reference to and as illustrated in the accompanying drawing.